

WHAT IS CLAIMED IS:

1. A process for the fluidized catalytic cracking of a hydrocarbon feedstock comprising:

passing a hydrocarbon feedstock and solid catalyst particles into a reaction

5 conduit to produce a mixture of solid catalyst particles and gaseous fluids;

inducing said mixture of said catalyst particles and gaseous fluids to swirl to

decrease the catalyst particle concentration and increase the gaseous fluids
concentration in said mixture;

transporting said mixture through a gas recovery conduit;

10 passing said mixture from said gas recovery conduit to at least one cyclone

through a cyclone inlet having a short side and a long side, said short side
being substantially tangential to a cross-sectional profile of said gas recovery
conduit;

inducing said mixture in said cyclone to swirl to further decrease the catalyst

15 particle concentration and further increase the gaseous fluids concentration
in said mixture.

2. The process of claim 1 wherein said mixture exits said reaction conduit
through a swirl arm to induce swirling.

3. The process of claim 1 wherein said cyclone directly communicates with
20 said gas recovery conduit.

4. The process of claim 1 wherein said mixture exits from said reaction conduit into a separation vessel and said gas recovery conduit directly communicates with said separation vessel.

5. The process of claim 1 further including depositing catalyst particles removed from said mixture in said cyclone into a stripping zone, contacting said catalyst particles with a stripping gas in said stripping zone, recovering stripped catalyst particles from said stripping zone and collecting gaseous fluids from said stripping zone.

6. The process of claim 1 wherein said mixture continues to swirl in said first angular direction while it is transported to the cyclone.

7. An apparatus for the fluidized catalytic cracking of a hydrocarbon feedstock comprising:

a reaction conduit for contacting a hydrocarbon feedstock and solid catalyst

particles to produce a mixture of solid catalyst particles and gaseous fluids;

a gas recovery conduit in communication with said reaction conduit;

a cyclone in communication with said gas recovery conduit, said cyclone having

an inlet comprising a short side and a long side, said short side being

substantially tangential to a cross sectional profile of said gas recovery conduit.

8. The apparatus of claim 7 wherein said reaction conduit has a swirl exit configured to induce the solid catalyst particles and gaseous fluids to swirl.

9. The apparatus of claim 8 wherein said swirl exit comprises a tubular swirl arm with one end connective with the reaction conduit and an opening at the opposite end.

10. The apparatus of claim 9 wherein said swirl arm curves about an axis that is parallel to said reaction conduit.

11. The apparatus of claim 9 wherein the swirl exit is positioned in a separation vessel.

12. The apparatus of claim 9 wherein a gas recovery conduit communicates the swirl exit of the reaction conduit with the cyclone.

13. The apparatus of claim 8 wherein said cyclone includes a centrally disposed gas outlet, and the swirl exit of the gas recovery conduit induces a first angular direction of swirl that is primarily toward said long side of said cyclone inlet. the cyclone.

14. The apparatus of claim 8 which is a part of an entire fluidized catalytic cracking unit.

15. An apparatus for the fluidized catalytic cracking of a hydrocarbon feedstock comprising:

a reaction conduit for contacting a hydrocarbon feedstock and solid catalyst

particles to produce a mixture of solid catalyst particles and gaseous fluids;

a gas recovery conduit in communication with said reaction conduit for transporting said mixture; and

a cyclone in communication with said gas recovery conduit, said cyclone having a curved outer wall and an inlet comprising a first side and a second side, a first side of said inlet being contiguous with said curved outer wall and said second side of said inlet being substantially tangential to a cross sectional profile of said gas recovery conduit.

16. The apparatus of claim 15 wherein said reaction conduit has a swirl exit configured to induce the solid catalyst particles and gaseous fluids to swirl.

17. The apparatus of claim 16 wherein said swirl arm curves in an angular orientation counter to the angular orientation in which said outer wall of the cyclone curves.

18. The apparatus of claim 16 wherein said swirl arm curves about an axis that is parallel to said reaction conduit.

19. The apparatus of claim 16 wherein the swirl exit end is positioned in a separation vessel.

20. The apparatus of claim 16 which is a part of an entire fluidized catalytic cracking unit.